Spatial and temporal distribution of cloud properties observed by MODIS

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Cloud properties have been retrieved from the Moderate Resolution Imaging Spectroradiometer (MODIS) over 18 years of continuous observations from Terra and nearly 16 years from Aqua. A comprehensive set of operational algorithms for the retrieval of cloud physical and optical properties (optical thickness, effective particle radius, water path, thermodynamic phase) have been updated using the new 'Collection 6.1' processing stream and are publically available through the MODIS Adaptive Processing System (MODAPS) at NASA GSFC [1]. The archived products from these algorithms include 1 km pixel-level (Level-2) and global gridded Level-3 products. The cloud products have applications in climate change studies, climate modeling, numerical weather prediction, as well as fundamental atmospheric research. In this talk, we will summarize the available Level-3 cloud properties and their associated statistical data sets, and show Terra and Aqua results from the available Collection 6.1 reprocessing effort. Results include the latitudinal and spatial distribution of cloud optical and radiative properties for both liquid water and ice clouds, as well as joint histograms of cloud optical thickness and effective radius for selected geographical locations around the world.

References

[1] Platnick, S., K. Meyer, M. D. King, G. Wind, N. Amarasinghe, B. Marchant, G. T. Arnold, Z. Zhang, P. A. Hubanks, R. E. Holz, P. Yang, W. L. Ridgway, and J. Riedi, 2017: The MODIS cloud optical and microphysical products: Collection 6 updates and examples from Terra and Aqua. *IEEE Trans. Geosci. Remote Sens.* **55**, 502–525.

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